

REMARKS

Claims 1 through 18 are pending in this Application. There are six independent claims. Claims 1, 6 and 12 are independent claims directed to an optical transmission system; claim 16, 17 and 18 are independent claims directed to an optical transmission method. By way of the present Amendment, claims 17 and 18 have been amended. Care has been exercised to avoid the introduction of new matter. Adequate descriptive support for the present Amendment should be apparent throughout the originally filed disclosure as, for example, the depicted embodiments and related discussion thereof in the written description of the specification. Applicants submit that the present Amendment does not generate any new matter issue. Entry of the present Amendment is respectfully solicited. It is believed that this response places this case in condition for allowance. Hence, prompt favorable reconsideration of this case is solicited.

Claims 1, 3, 4, 6, 8, 9, 11, 13, 14 and 16 through 18 were rejected under 35 U.S.C. § 103 for obviousness predicated upon Mitsuda et al. (U.S. Pat. No. 5,563,733, hereinafter "Mitsuda") in view of Ogoshi et al. (U.S. Pat. No. 6,028,698, hereinafter "Ogoshi"). Applicants respectfully traverse.

In the statement of the rejection, the Examiner admitted that Mitsuda does not disclose an optical transmission system or method wherein the first signal light component having the first signal wavelength whose noise figure between said first signal multiplexing section and said receiving section is lower than that of said second signal wavelength and is selectively assigned as the signal light component multiplexed at the first signal multiplexing section. Nevertheless, the Examiner concluded that one having ordinary skill in the art would have been motivated to modify the optical transmission system and methodology of Mitsuda by having a first signal

wavelength at the first multiplexing section that has a lower noise figure than the second signal wavelength at the second multiplexing section in view of Ogoshi.

In response to Applicant arguments submitted on January 24, 2004, the Examiner maintained the rejection and asserted that Mitsuda discloses multiplexing stations comprising multiplexing sections (element 21 of Fig. 6) and a transmitter coupled with wavelength indicating device (elements 11 of Fig. 6 at 0.98/1.55  $\mu\text{m}$ ). Moreover, the Examiner stated that elements 31, 32 and 33 of Fig. 6 allegedly act as EDFA or optical amplifiers and that the multiplexing stations (elements 21 and 11 of Fig. 6) are installed outside of the optical amplifiers.

Applicants respectfully submit that the Examiner has not properly construed the teachings of the Mitsuda reference. In view of the arguments presented *infra*, Applicants respectfully request the Examiner to reconsider and withdraw the rejections in view of the clear difference between the optical fiber amplifier of Mitsuda and the optical transmission system of the present claimed invention.

As asserted in the previous response dated January 29, 2004, Mitsuda discloses a configuration of the optical fiber amplifier itself, as illustrated in Fig. 6. In the optical amplifier of Mitsuda, WDM couplers are installed in the amplifier. Again, in contradistinction to the optical amplifier and methodology of Mitsuda, in accordance with the present invention, the multiplexing stations are installed outside of the optical amplifier, and on the ordinary optical transmission line.

Mitsuda, at col. 7, Example 3, discloses the amplifier configuration for coupling the signal light with the pump light. For example, the WDM coupler 21 shown in Fig. 6 of Mitsuda, is used for coupling the first and second signals 51 and 53 with the pump light 35 from the pump

laser diode 11. Note that, in Fig. 6 of Mitsuda, 51 and 53 denote signal light components, 55, 56 and 57 denote pump light components (see col. 7 line 37 – line 61), and thus, the WDM couplers 21 to 23 are all used for coupling the signals with the pump light. Mitsuda does not disclose or suggest the multiplexing of signals 51 and 53.

In contrast, in the optical transmission system of the present invention, the multiplexing stations are installed outside the optical amplifier. In this system configuration, as described in independent claims 1, 6, 11 and 16, the multiplexing station is used for multiplexing the signal light components in a predetermined wavelength band. In other words, the multiplexing station is not used for coupling the signal light with the pump light for optical amplification. As described in the present specification, the term multiplexing is understood as the simultaneous transmittance of two or more signals on a single channel. See page 11, lines 4-16 of the present specification. Applicants have amended claims 17 and 18 to further clarify that the first and second multiplexing sections are for guiding a first signal light component and second signal light component into said optical transmission line, respectively. Moreover, in Fig. 1 of the present application, the EDFA 2 is illustrated separately from the multiplexing stations 3 to 5 installed on the optical transmission line 1.

Further, with Mitsuda's optical amplifier, the noise figure of the amplifier is directly adjusted. Mitsuda clearly states that as to this amplifier "... noise can be minimized by exciting the signal by the 0.98  $\mu\text{m}$  pump light at an output section of the optical fiber amplifier." See col. 7 of Mitsuda, lines 60 through 66. In other words, the noise figure of the amplifier disclosed by Mitsuda is directly adjusted within the amplifier itself as apparent from a reading of column 7 of Mitsuda, lines 20 through column 8, line 4.

On the other hand, in the optical transmission system of the present invention, the noise figure of the amplifier itself is not adjusted, and fluctuations in S/N ratio are reduced according to the correlation between the wavelength dependency of the noise figure and the transmission length, as described in the written description of the specification. Such an optical transmission system and optical transmission method are neither disclosed nor suggested by the applied references. Thus, the optical transmission system of the present invention is patentably distinct from the optical amplifier disclosed in Mitsuda. Applicants submit that the above described system configuration is neither disclosed nor suggested in Mitsuda. Accordingly, there are fundamental differences between the claimed optical transmission system and method and those disclosed by the applied references that undermine the obviousness conclusion under 35 U.S.C. § 103.

With respect to the secondary reference, Ogoshi discloses a configuration of the optical fiber amplifier itself, such as a pumping configuration, as illustrated in Fig. 1 of Ogoshi. Clearly, the optical transmission system of the present invention is completely different from that of Ogoshi and, therefore, even if Ogoshi and Mitsuda are combined, the claimed inventions would not result.

Based upon the foregoing, it should be apparent that even if the applied references are combined as suggested by the Examiner, and Applicants do not agree that the requisite fact-based motivation has been established, the claimed invention would not result. *Uniroyal, Inc. v. Rudkin-Wiley Corp.*, 837 F.2d 1044, 5 USPQ2d 1434 (Fed. Cir. 1988). Applicants, therefore, submit that the imposed rejection of claims 1, 3, 4, 6, 8, 9, 11, 13, 14 and 16 through 18 under 35 U.S.C. § 103 for obviousness predicated upon Mitsuda in view of Ogoshi is not factually or legally viable and, hence, solicit withdrawal thereof.

Claims 2, 5, 7, 10, 12 and 15 were rejected under 35 U.S.C. § 103 for obviousness predicated upon Mitsuda in view of Ogoshi and Shimomura et al. (U.S. Pat. No. 6,404,525, hereinafter "Shimomura").

This rejection is traversed. Specifically, claims 2 and 5 depend from independent claim 1, claims 7 and 10 depend from independent claim 6, and claims 12 and 15 depend from independent claim 11. Applicants incorporate herein the arguments previously advanced in traversing the imposed rejection of claims 1, 6 and 11 under 35 U.S.C. § 103 for obviousness predicated upon Mitsuda in view of Ogoshi. The additional reference to Shimomura does not cure the argued deficiencies in the attempted combination of Mitsuda and Ogoshi. Indeed, Shimomura merely discloses an optical add-drop multiplex (ADM). However, Shimomura neither discloses nor suggests an optical transmission system as in the present invention. Accordingly, even if all the applied references are combined, and again Applicants do not agree that the requisite fact-based motivation has been established, the claimed inventions would not result. *Uniroyal, Inc. v. Rudkin-Wiley Corp., supra*.

Applicants, therefore, submit that the imposed rejection of claims 2, 5, 7, 10, 12 and 15 under 35 U.S.C. § 103 for obviousness predicated upon Mitsuda in view of Ogoshi and Shimomura is not factually or legally viable and, hence, solicit withdrawal thereof. Accordingly, favorable consideration is solicited.

It is believed that all pending claims are now in condition for allowance. Applicants therefore respectfully request an early and favorable reconsideration and allowance of this application. If there are any outstanding issues which might be resolved by an interview or an Examiner's amendment, the Examiner is invited to call Applicants' representative at the telephone number shown below.

09/781,564

To the extent necessary, a petition for an extension of time under 37 C.F.R. 1.136 is hereby made. Please charge any shortage in fees due in connection with the filing of this paper, including extension of time fees, to Deposit Account 500417 and please credit any excess fees to such deposit account.

Respectfully submitted,

MCDERMOTT WILL & EMERY LLP

A handwritten signature in black ink, appearing to read "Brian K. Seidleck". The signature is fluid and cursive, with the first name "Brian" and last name "Seidleck" clearly distinguishable.

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Date: **July 6, 2004**